

EMC TEST REPORT
for
Shenzhen Alean Security Equipment Co., Ltd.

Alarm Control Panel
Model No.: AN-808T, AN-816T, AN-808G, AN-816G
Trade Name: ALEAN

Prepared for : Shenzhen Alean Security Equipment Co., Ltd.
Address : 5F, Building 6, Jiayiyuan Tech Park, Huaning Rd., Dalang
Sub-district, Longhua Town, Shenzhen, 518000 P.R. China

Prepared By : Accurate Technology Co., Ltd.
Address : F1, Bldg. A&D, Changyuan New Material Port, Keyuan
Rd., Science & Industry Park, Nanshan District, Shenzhen
518057, P.R. China

Tel: +86-755-26503290
Fax: +86-755-26503396

Report Number : ATE20130635
Date of Test : April 16, 2013
Date of Report : April 16, 2013

TABLE OF CONTENT

Description

Page

Test Report Declaration

1. TEST RESULTS SUMMARY	6
2. GENERAL INFORMATION.....	7
2.1. Description of Device (EUT).....	7
2.2. Accessory and Auxiliary Equipment	7
2.3. Description of Test Facility	8
2.4. Measurement Uncertainty	8
3. MEASURING DEVICE AND TEST EQUIPMENT	9
3.1. For Power Line Conducted Emission	9
3.2. For Radiated Emission Measurement	10
3.3. For Harmonic Current / Flicker Measurement	10
3.4. For Electrostatic Discharge Immunity Test.....	10
3.5. For RF Strength Susceptibility Test.....	11
3.6. For Electrical Fast Transient /Burst Immunity Test.....	11
3.7. For Surge Immunity Test.....	11
3.8. For Injected Current Susceptibility Test	12
3.9. For Voltage Dips and Interruptions Test.....	12
4. POWER LINE CONDUCTED EMISSION MEASUREMENT.....	13
4.1. Block Diagram of Test Setup.....	13
4.2. Measuring Standard	13
4.3. Power Line Conducted Emission Limits (Class B)	13
4.4. EUT Configuration on Measurement.....	13
4.5. Operating Condition of EUT	14
4.6. Test Procedure	14
4.7. Measuring Results.....	15
5. RADIATED EMISSION MEASUREMENT.....	18
5.1. Block Diagram of Test	18
5.2. Measuring Standard	18
5.3. Radiated Emission Limits	19
5.4. EUT Configuration on Test.....	19
5.5. Operating Condition of EUT	19
5.6. Test Procedure	19
5.7. Measuring Results.....	20
6. HARMONIC CURRENT EMISSION MEASUREMENT	23
6.1. Block Diagram of Test Setup.....	23
6.2. Measuring Standard	23
6.3. Operation Condition of EUT	23
6.4. Measuring Results.....	23
7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT	27
7.1. Block Diagram of Test Setup.....	27
7.2. Measuring Standard	27
7.3. Operation Condition of EUT	27
7.4. Measuring Results.....	27
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST	29

8.1.	Block Diagram of Test Setup	29
8.2.	Test Standard	29
8.3.	Severity Levels and Performance Criterion	29
8.4.	EUT Configuration	30
8.5.	Operating Condition of EUT	30
8.6.	Test Procedure	30
8.7.	Test Results	30
9.	RF FIELD STRENGTH SUSCEPTIBILITY TEST	32
9.1.	Block Diagram of Test	32
9.2.	Test Standard	32
9.3.	Severity Levels and Performance Criterion	33
9.4.	EUT Configuration on Test	33
9.5.	Operating Condition of EUT	33
9.6.	Test Procedure	33
9.7.	Test Results	33
10.	ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST	35
10.1.	Block Diagram of Test Setup	35
10.2.	Test Standard	35
10.3.	Severity Levels and Performance Criterion	35
10.4.	EUT Configuration	36
10.5.	Operating Condition of EUT	36
10.6.	Test Procedure	36
10.7.	Test Result	36
11.	SURGE IMMUNITY TEST	38
11.1.	Block Diagram of Test Setup	38
11.2.	Test Standard	38
11.3.	Severity Levels and Performance Criterion	38
11.4.	EUT Configuration	39
11.5.	Operating Condition of EUT	39
11.6.	Test Procedure	39
11.7.	Test Result	39
12.	INJECTED CURRENTS SUSCEPTIBILITY TEST	41
12.1.	Block Diagram of Test Setup	41
12.2.	Test Standard	41
12.3.	Severity Levels and Performance Criterion	41
12.4.	EUT Configuration	42
12.5.	Operating Condition of EUT	42
12.6.	Test Procedure	42
12.7.	Test Results	42
13.	VOLTAGE DIPS AND INTERRUPTIONS TEST	44
13.1.	Block Diagram of Test Setup	44
13.2.	Test Standard	44
13.3.	Severity Levels and Performance Criterion	44
13.4.	EUT Configuration	45
13.5.	Operating Condition of EUT	45
13.6.	Test Procedure	45
13.7.	Test Result	45
14.	PHOTOGRAPHS.....	47
14.1.	Photo of Conducted Emission Measurement	47
14.2.	Photo of Radiated Emission Measurement	47
14.3.	Photo of Harmonic / Flicker Measurement	48
14.4.	Photo of Electrostatic Discharge Test	48
14.5.	Photo of RF Field Strength Susceptibility Test	49

14.6.	Photo of Electrical Fast Transient /Burst Test	49
14.7.	Photo of Surge and Voltage Dips and Interruption Immunity Test	50
14.8.	Photo of Injected Current Susceptibility Test	50
14.9.	Photo of EUT	51

TEST REPORT DECLARATION

Applicant : Shenzhen Alean Security Equipment Co., Ltd.

Manufacturer : Shenzhen Alean Security Equipment Co., Ltd.

Product : Alarm Control Panel

Model No. : AN-808T, AN-816T, AN-808G, AN-816G

Trade Name : ALEAN

Measurement Procedure Used:

EN 61000-6-3: 2007 + A1: 2011

EN 61000-3-2: 2006 + A1: 2009 + A2: 2009

EN 61000-3-3: 2008

EN 61000-6-1: 2007 (IEC 61000-4-2: 2008, IEC 61000-4-3: 2010

IEC 61000-4-4: 2012, IEC 61000-4-5: 2005

IEC 61000-4-6: 2008, IEC 61000-4-11: 2004)

The device described above is tested by Accurate Technology Co., Ltd. To determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Accurate Technology Co., Ltd. Is assumed full of responsibility for the accuracy and completeness of these measurements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Accurate Technology Co., Ltd.

Date of Test :

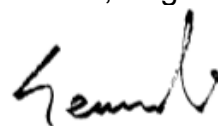
April 16, 2013

Prepared by :



(Jane Lü, Engineer)

Approved & Authorized Signer :



(Sean Liu, Manager)

1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
Power Line Conducted Emission	EN 61000-6-3: 2007 + A1: 2011	Pass
Radiated Emission	EN 61000-6-3: 2007 + A1: 2011	Pass
Harmonic Current	EN 61000-3-2: 2006 + A1: 2009 + A2: 2009	Pass
Voltage Fluctuation and Flicker	EN 61000-3-3: 2008	Pass
Electrostatic Discharge Immunity	EN 61000-6-1: 2007 (IEC61000-4-2: 2008)	Pass
Radiated Electromagnetic Fields Immunity	EN 61000-6-1: 2007 (IEC 61000-4-3: 2010)	Pass
Electrical Fast Transients/Bursts Immunity	EN 61000-6-1: 2007 (IEC 61000-4-4: 2012)	Pass
Surge Immunity	EN 61000-6-1: 2007 (IEC 61000-4-5: 2005)	Pass
Injected Current Susceptibility Test	EN 61000-6-1: 2007 (IEC 61000-4-6: 2008)	Pass
Voltage dips and interruptions Immunity	EN 61000-6-1: 2007 (IEC 61000-4-11: 2004)	Pass

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product : Alarm Control Panel

Model No. : AN-808T, AN-816T, AN-808G, AN-816G
(Note: These samples are same except their appearance is different. So we prepare AN-808G for test only.)

Trade Name : ALEAN

Rating : AC 110-240V, 50/60Hz

Applicant : Shenzhen Alean Security Equipment Co., Ltd.
Address : 5F, Building 6, Jiayiyuan Tech Park, Huaning Rd., Dalang Sub-district, Longhua Town, Shenzhen, 518000 P.R. China

Manufacturer : Shenzhen Alean Security Equipment Co., Ltd.
Address : 5F, Building 6, Jiayiyuan Tech Park, Huaning Rd., Dalang Sub-district, Longhua Town, Shenzhen, 518000 P.R. China

Date of sample received : April 12, 2013
Date of Test : April 16, 2013

2.2. Accessory and Auxiliary Equipment

n.a.

2.3. Description of Test Facility

EMC Lab	: Accredited by TUV Rheinland Shenzhen, May 10, 2004
	Listed by FCC
	The Registration Number is 253065
	Listed by FCC
	The Registration Number is 752051
	Listed by Industry Canada
	The Registration Number is 5077A-1
	Listed by Industry Canada
	The Registration Number is 5077A-2
	Accredited by China National Accreditation Committee for Laboratories
	The Certificate Registration Number is L3193
Name of Firm	: Accurate Technology Co., Ltd.
Site Location	: F1, Bldg. A&D, Changyuan New Material Port, Keyuan Rd., Science & Industry Park, Nanshan District, Shenzhen 518057, P.R. China
Subcontractor	: Shenzhen Academy of Metrology and Quality Inspection
Site Location	: Bldg. of Metrology & Quality Inspection, Longzhu Road Nanshan District, Shenzhen, Guangdong, China

2.4. Measurement Uncertainty

Radiated emission expanded uncertainty (9kHz-30MHz)	: U=3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	: U=4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	: U=4.06dB, k=2
Conduction Emission Expanded Uncertainty	: U=2.23dB, k=2
Power disturbance Expanded Uncertainty	: U=2.92dB, k=2

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan. 12, 2013	1 Year
2.	Test Receiver	Rohde & Schwarz	ESPI3	100396/003	Jan. 12, 2013	1 Year
3.	Test Receiver	Rohde & Schwarz	ESPI3	101526/003	Jan. 12, 2013	1 Year
4.	L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan. 12, 2013	1 Year
5.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100305	Jan. 12, 2013	1 Year
6.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100310	Jan. 12, 2013	1 Year
7.	L.I.S.N.	Rohde & Schwarz	ESH3-Z6	100132	Jan. 12, 2013	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan. 12, 2013	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100312	Jan. 12, 2013	1 Year
10.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	Jan. 12, 2013	1 Year
11.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan. 12, 2013	1 Year
12.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283933	Jan. 12, 2013	1 Year
13.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200506474	Jan. 12, 2013	1 Year
14.	VOLTAGE PROBE	Schwarzbeck	TK9416	N/A	Jan. 12, 2013	1 Year
15.	RF CURRENT PROBE	Rohde & Schwarz	EZ-17	100048	Jan. 12, 2013	1 Year
16.	8-Wire Impedance Stabilisation Network	Schwarzbeck	CAT5 8158	8158-0035	Jan. 12, 2013	1 Year
17.	RF Coaxial Cable	SUHNER	N-2m	No.2	Jan. 12, 2013	1 Year
18.	RF Coaxial Cable	SUHNER	N-2m	No.3	Jan. 12, 2013	1 Year
19.	RF Coaxial Cable	SUHNER	N-2m	No.14	Jan. 12, 2013	1 Year

3.2.For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Dec. 10, 2012	1 Year
2.	Test Receiver	Rohde& Schwarz	ESPI3	100396/003	Jan. 12, 2013	1 Year
3.	Test Receiver	Rohde& Schwarz	ESPI3	101526/003	Jan. 12, 2013	1 Year
4.	Bilog Antenna	Schwarzbeck	VULB9163	9163-194	Feb. 06, 2013	1 Year
5.	Log.-Per.Antenna	Schwarzbeck	VUSLP 9111B	9111B-074	Dec.13, 2012	1 Year
6.	Biconical Broad Band Antenna	Schwarzbeck	VHBB 9124+BBA 9106	9124-617	Oct. 30, 2012	1 Year
7.	Horn Antenna	Schwarzbeck	BBHA9120 D	9120D-1067	Oct. 30, 2012	1 Year
8.	RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	Dec. 14, 2012	1 Year
9.	Pre-Amplifier	Agilent	8447D	294A10619	Jan. 12, 2013	1 Year
10.	50 Coaxial Switch	Anritsu Corp	MP59B	6200237248	Jan. 12, 2013	1 Year
11.	RF Coaxial Cable	Schwarzbeck	N-5m	No.1	Jan. 12, 2013	1 Year
12.	RF Coaxial Cable	Schwarzbeck	N-1m	No.6	Jan. 12, 2013	1 Year
13.	RF Coaxial Cable	Schwarzbeck	N-1m	No.7	Jan. 12, 2013	1 Year
14.	RF Coaxial Cable	SUHNER	N-3m	No.8	Jan. 12, 2013	1 Year
15.	RF Coaxial Cable	SUHNER	N-2m	No.13	Jan. 12, 2013	1 Year
16.	RF Coaxial Cable	SUHNER	N-0.5m	No.15	Jan. 12, 2013	1 Year
17.	RF Coaxial Cable	SUHNER	N-2m	No.16	Jan. 12, 2013	1 Year
18.	RF Coaxial Cable	RESENBERGER	N-6m	No.17	Jan. 12, 2013	1 Year

3.3.For Harmonic Current / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	AC Power Source	California Instruments	5001iX-400	55689	Jan. 12, 2013	1Year
2.	Test analyzer	California Instruments	PACS-1	72254	Jan. 12, 2013	1Year

3.4.For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1610	H4001552	Jan. 15, 2013	1 Year

3.5.For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Rohde&Schwarz	SMT03	100059	Jan. 16, 2013	1 Year
2.	Voltage Probe	Rohde&Schwarz	URV5-Z2	100012	Jan. 24, 2013	1 Year
3.	Voltage Probe	Rohde&Schwarz	URV5-Z2	100013	Jan. 24, 2013	1 Year
4.	Power Amplifier	AR	150W1000	300999	Jan. 21, 2013	1 Year
5.	Power Amplifier	AR	150A220M6	305965	Jan. 22, 2013	1 Year
6.	Power Amplifier	AR	25S 1G4AM1	305993	Jan. 22, 2013	1 Year
7.	Audio Analyzer	Rohde & Schwarz	UPL	100026	Dec. 20, 2012	1 Year
8.	Antenna	CHASE	CBL6111C	2576	Jan. 21, 2013	1 Year
9.	Horn Antenna	AR	AT4002A	305754	Jan. 21, 2013	1 Year

3.6.For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104 968	Jan. 12, 2013	1Year
2.	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	Jan. 12, 2013	1Year
3.	Transformer	EM TEST	V4780S2	0109-44	Jan. 12, 2013	1Year
4.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Sep. 15, 2012	1Year

3.7.For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104 968	Jan. 12, 2013	1Year
2.	Transformer	EM TEST	V4780S2	0109-44	Jan. 12, 2013	1Year
3.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 12, 2013	1Year
4.	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	Jan. 12, 2013	1Year

3.8.For Injected Current Susceptibility Test

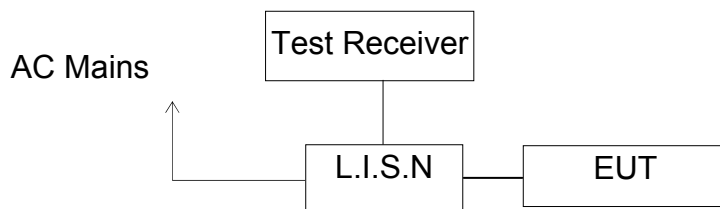
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	Jan. 12, 2013	1Year
2.	CDN	FRANKONIA	CDN-M2/3	A3027020	Jan. 12, 2013	1Year
3.	EM Injection Clamp	FCC	F-203I-23mm	091824	Jan. 12, 2013	1Year
4.	Calibration Fixture	FCC	F-203I-23mm-CF	091822	N.A.	N.A.
5.	6dB Attenuator	Weinschel	WA59-6-33	A329	Jan. 12, 2013	1Year
6.	150/50 ohms Adaptor	Frankonia	N/A	025	N.A.	N.A.

3.9.For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104 968	Jan. 12, 2013	1Year
2.	Transformer	EM TEST	V4780S2	0109-44	Jan. 12, 2013	1Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



(EUT: Alarm Control Panel)

4.2. Measuring Standard

EN 61000-6-3: 2007 + A1: 2011

4.3. Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 - 56.0 *	56.0 - 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

Note1: The lower limit shall apply at the transition frequencies.
Note2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 61000-6-3 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

4.4.1. Alarm Control Panel (EUT)

Model Number : AN-808G

Manufacturer : Shenzhen Alean Security Equipment Co., Ltd.

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown on Section 4.1.
- 4.5.2. Turn on the power of all equipments.
- 4.5.3. Let the EUT work in test mode (On) and measure it.

4.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50 Ω coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 61000-6-3 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9 kHz in 150 kHz-30MHz and 200Hz in 9 kHz 150 kHz.

The frequency range from 150 kHz to 30MHz is investigated for AC mains.

4.7.Measuring Results

PASS.

The frequency range 9 kHz to 30MHz is investigated.

Test mode: On

MEASUREMENT RESULT: "A-0416-03_fin"

4/16/2013 10:39AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150600	44.50	11.5	66	21.5	QP	L1	GND
0.160533	43.00	11.5	65	22.4	QP	L1	GND
22.129214	43.50	12.0	60	16.5	QP	L1	GND

MEASUREMENT RESULT: "A-0416-03_fin2"

4/16/2013 10:39AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
22.129214	44.10	12.0	50	5.9	AV	L1	GND

MEASUREMENT RESULT: "A-0416-02_fin"

4/16/2013 10:36AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.155487	45.30	11.5	66	20.4	QP	N	GND
0.177381	41.70	11.6	65	22.9	QP	N	GND
22.129214	44.50	12.0	60	15.5	QP	N	GND

MEASUREMENT RESULT: "A-0416-02_fin2"

4/16/2013 10:36AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
22.129214	45.00	12.0	50	5.0	AV	N	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD EN 61000-6-3

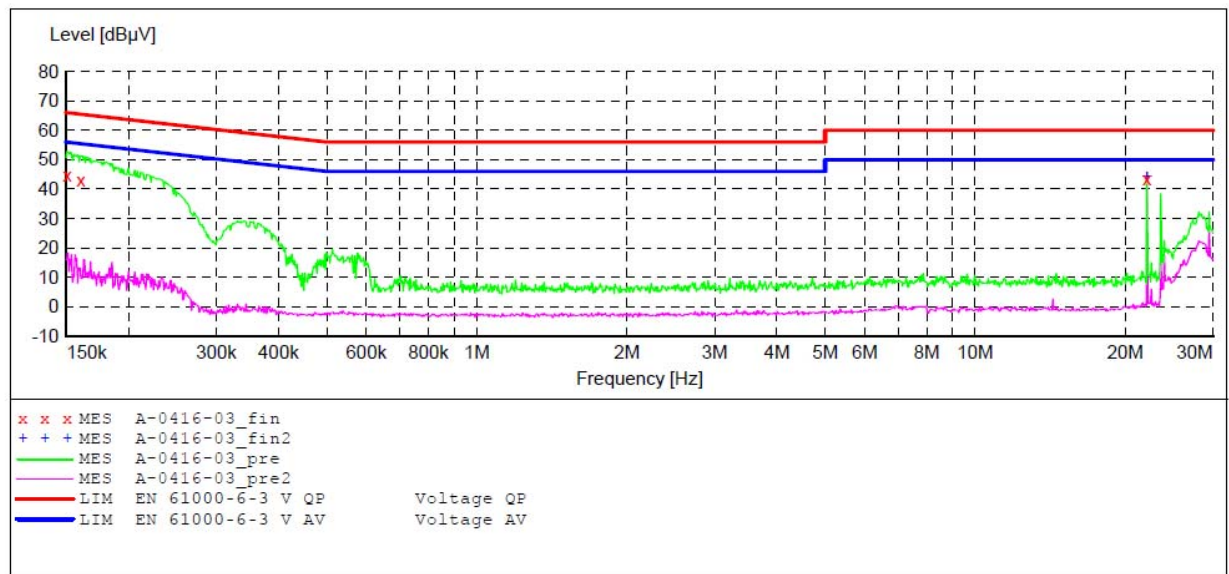
EUT: Alarm Control Panel M/N:AN-808G
 Manufacturer: Alean
 Operating Condition: ON
 Test Site: 1#Shielding Room
 Operator: TOM
 Test Specification: L 230V/50Hz
 Comment: Report No.:ATE20130635
 Start of Test: 4/16/2013 / 10:37:15AM

SCAN TABLE: "V 150K-30MHZ fin"

Short Description: _SUB_STD VTERM2 1.70

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008

Average



ACCURATE TECHNOLOGY CO., LTD

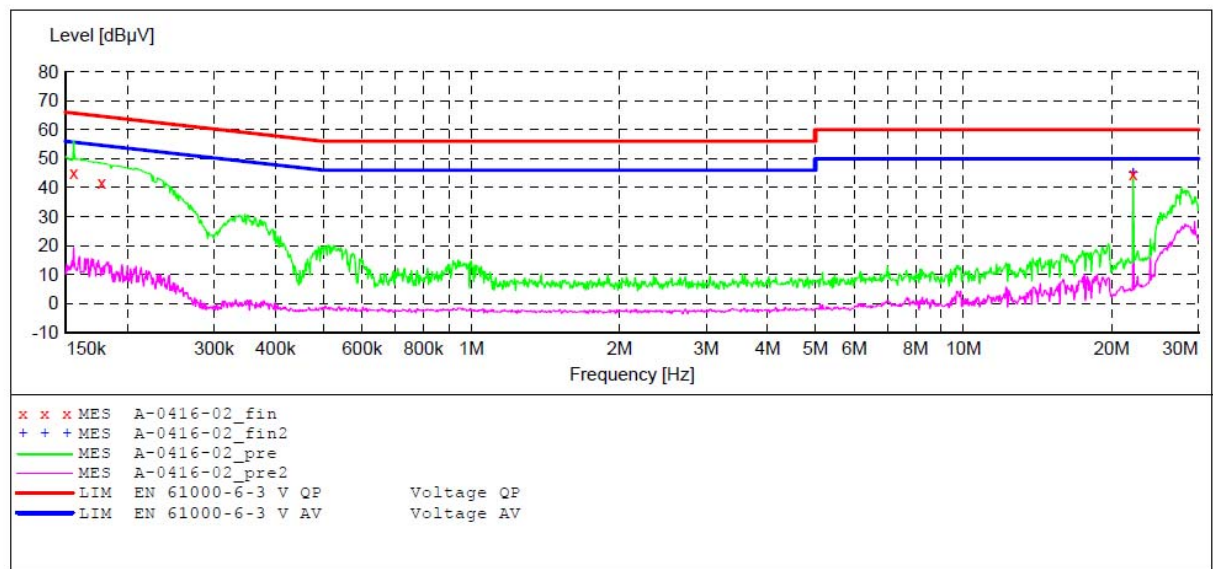
CONDUCTED EMISSION STANDARD EN 61000-6-3

EUT: Alarm Control Panel M/N:AN-808G
 Manufacturer: Alean
 Operating Condition: ON
 Test Site: 1#Shielding Room
 Operator: TOM
 Test Specification: N 230V/50Hz
 Comment: Report No.:ATE20130635
 Start of Test: 4/16/2013 / 10:34:42AM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

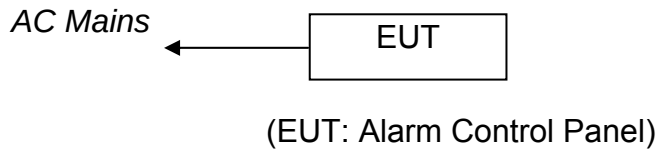
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



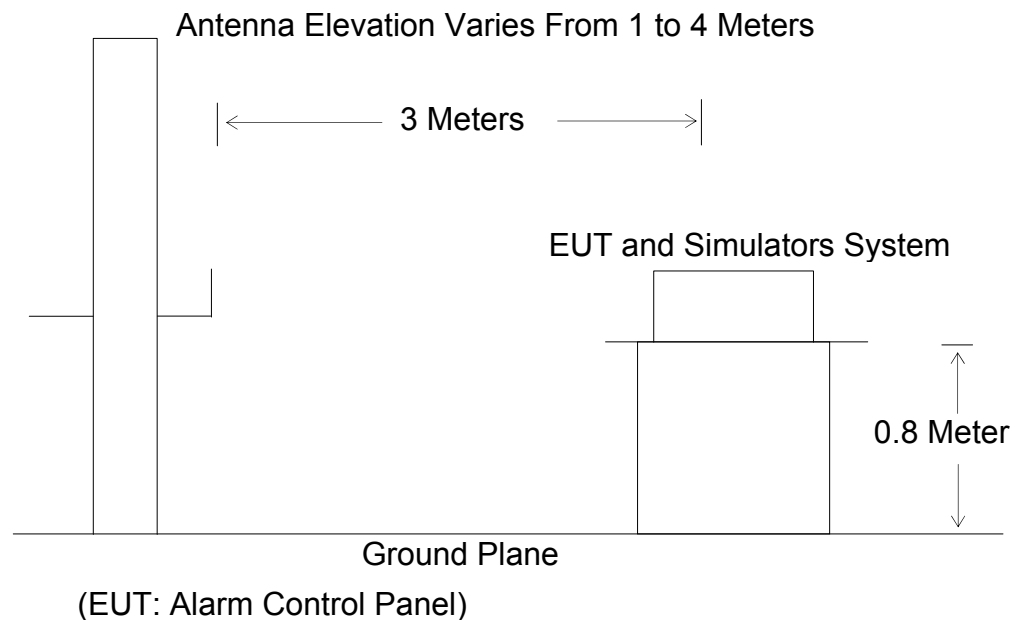
5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test

5.1.1. Block diagram of connection between the EUT and simulators



5.1.2. Block diagram of test setup (In chamber)



5.2. Measuring Standard

EN 61000-6-3: 2007 + A1: 2011

5.3. Radiated Emission Limits

Frequency (MHz)	Distance (Meters)	Field Strengths Limit dB(μ V/m)
30 - 230	3	40
230 - 1000	3	47

- Note:
- (1) The smaller limit shall apply at the combination point between two frequency bands.
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Test

Test equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1. Alarm Control Panel (EUT)

Model Number : AN-808G

Manufacturer : Shenzhen Alean Security Equipment Co., Ltd.

5.5. Operating Condition of EUT

5.5.1. Setup the EUT and simulator as shown as Section 5.1.

5.5.2. Turn on the power of all equipment.

5.5.3. Let the EUT work in test mode (On) and measure it.

5.6. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120 kHz.

5.7.Measuring Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

Test Mode: On								
Polarization								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	65.8900	58.05	-21.21	36.84	40.00	-3.16	QP
	2	131.8499	61.46	-24.11	37.35	40.00	-2.65	QP
	3	165.8000	60.40	-23.24	37.16	40.00	-2.84	QP
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	88.2000	59.90	-22.36	37.54	40.00	-2.46	QP
	2	110.5100	59.37	-21.88	37.49	40.00	-2.51	QP
	3	132.8198	59.57	-22.28	37.29	40.00	-2.71	QP

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.


ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: tom #518

Standard: EN61000-6-3

Test item: Radiation Test

Temp.(C)/Hum.(%) 26 C / 55 %

EUT: Alarm Control Panel

Mode: ON

Model: AN-808G

Manufacturer: Alean

Polarization: Horizontal

Power Source: AC 230V/50Hz

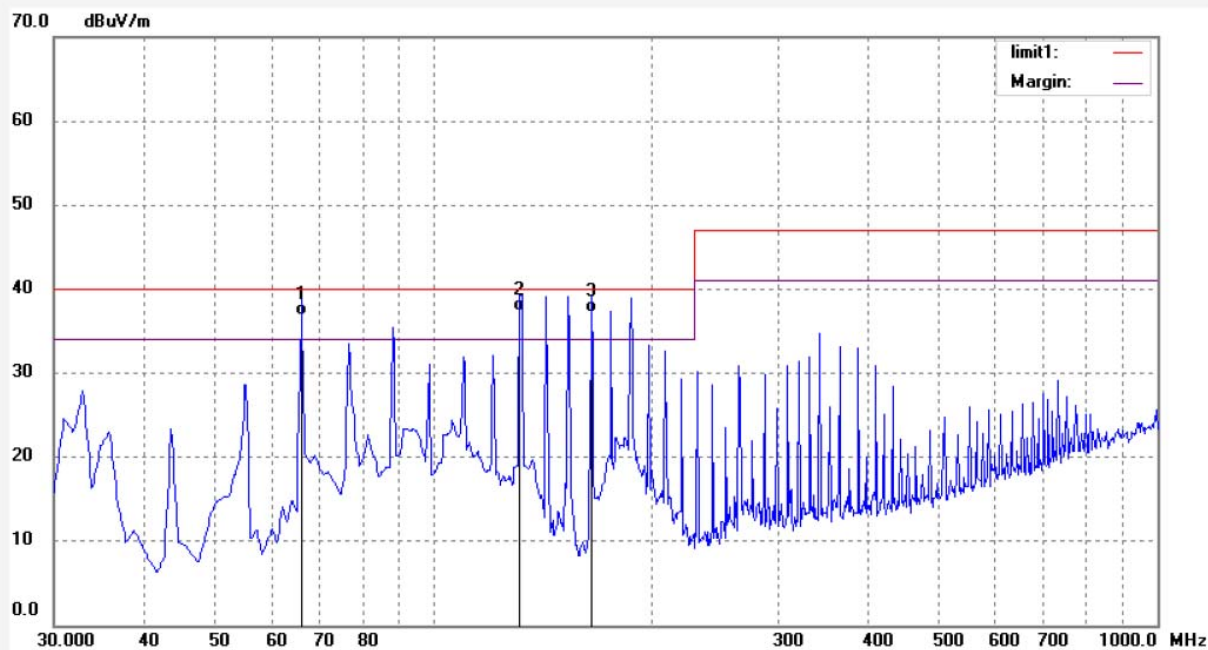
Date: 13/04/16/

Time: 11/20/23

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	65.8900	58.05	-21.21	36.84	40.00	-3.16	QP			
2	131.8499	61.46	-24.11	37.35	40.00	-2.65	QP			
3	165.8000	60.40	-23.24	37.16	40.00	-2.84	QP			


ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: tom #519

Standard: EN61000-6-3

Test item: Radiation Test

Temp.(C)/Hum.(%) 26 C / 55 %

EUT: Alarm Control Panel

Mode: ON

Model: AN-808G

Manufacturer: Alean

Polarization: Vertical

Power Source: AC 230V/50Hz

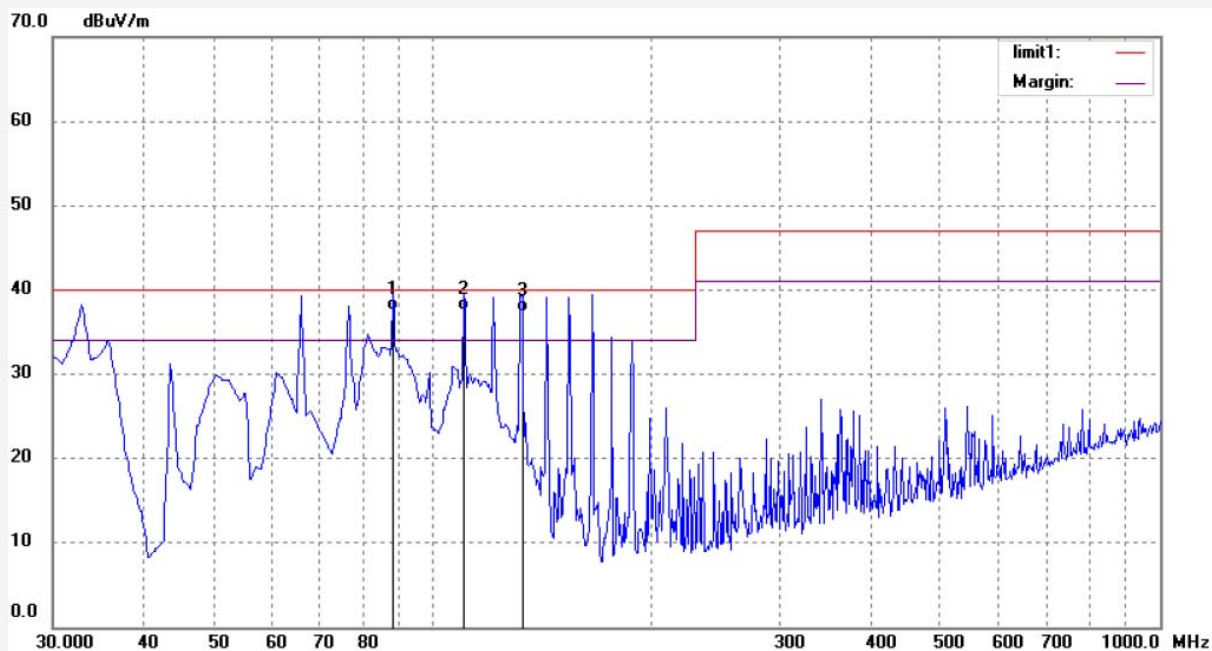
Date: 13/04/16/

Time: 11/19/31

Engineer Signature:

Distance: 3m

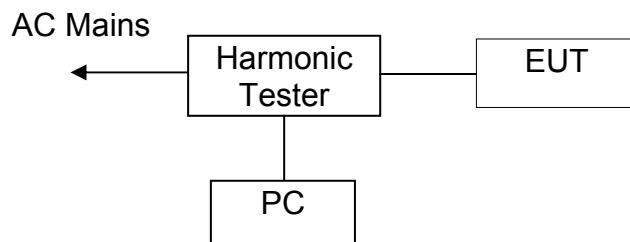
Note: Report No.:ATE20130635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	88.2000	59.90	-22.36	37.54	40.00	-2.46	QP			
2	110.5100	59.37	-21.88	37.49	40.00	-2.51	QP			
3	132.8198	59.57	-22.28	37.29	40.00	-2.71	QP			

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



(EUT: Alarm Control Panel)

6.2. Measuring Standard

EN 61000-3-2: 2006 + A1: 2009 + A2: 2009, CLASS A

6.3. Operation Condition of EUT

6.3.1. Setup the EUT and simulator as shown as Section 6.1.

6.3.2. Turn on the power of all equipment.

6.3.3. Let the EUT work in test mode (On) and measure it.

6.4. Measuring Results

PASS.

The active input power of this EUT is lower than 75W. Therefore, according to EN 61000-3-2, no limits are necessary.

See the following pages.

Harmonics – Class-A per Ed. 3.0 (2006)(Run time)

EUT: Alarm Control Panel M/N:AN-808G

Tested by: TOM

Test category: Class-A per Ed. 3.0 (2006) (European limits)

Test Margin: 100

Test date: 2013-4-16

Start time: 10:25:16

End time: 10:28:06

Test duration (min): 2.5

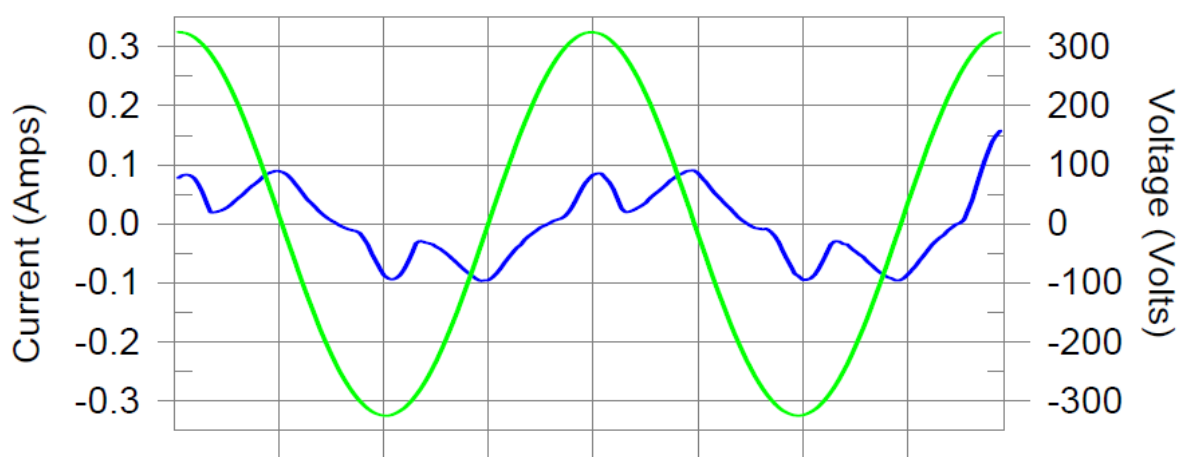
Data file name: H-000324.cts_data

Comment: ON Report No.:ATE20130635

Customer: Alean

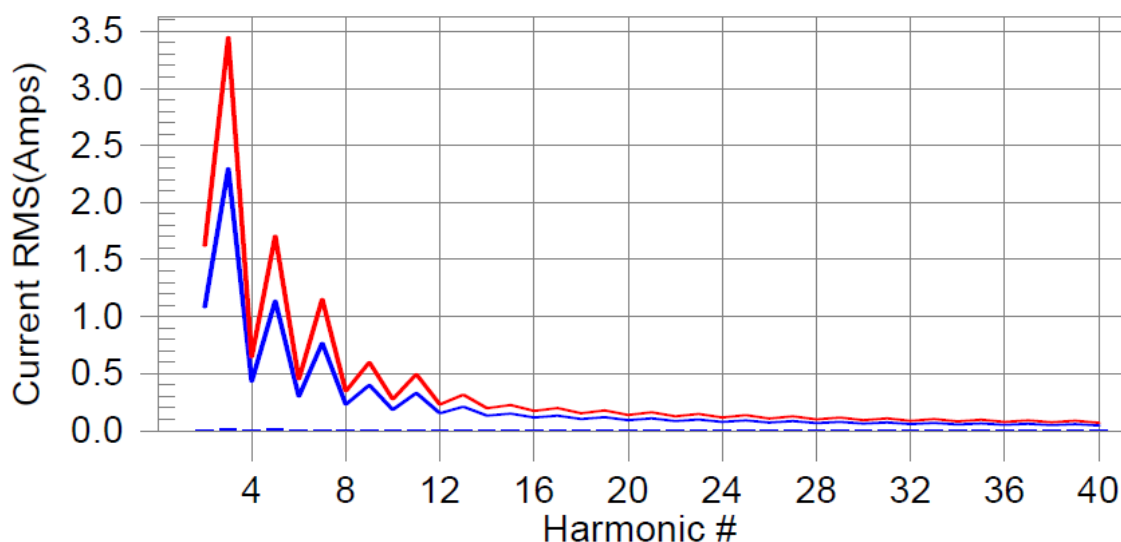
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #5 with 1.13% of the limit.

Current Test Result Summary (Run time)

EUT: Alarm Control Panel M/N:AN-808G **Tested by:** TOM
Test category: Class-A per Ed. 3.0 (2006) (European limits) **Test Margin:** 100
Test date: 2013-4-16 **Start time:** 10:25:16 **End time:** 10:28:06
Test duration (min): 2.5 **Data file name:** H-000324.cts_data
Comment: ON Report No.:ATE20130635
Customer: Alean

Test Result: Pass **Source qualification:** Normal
THC(A): 0.02 **I-THD(%):** 42.06 **POHC(A):** 0.000 **POHC Limit(A):** 0.320
Highest parameter values during test:
V_RMS (Volts): 229.81 **Frequency(Hz):** 50.00
I_Peak (Amps): 0.172 **I_RMS (Amps):** 0.064
I_Fund (Amps): 0.055 **Crest Factor:** 2.900
Power (Watts): 8.1 **Power Factor:** 0.597

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.002	1.620	0.10	Pass
3	0.017	2.300	0.7	0.020	3.450	0.58	Pass
4	0.001	0.430	0.0	0.001	0.645	0.14	Pass
5	0.013	1.140	1.1	0.016	1.710	0.93	Pass
6	0.000	0.300	0.0	0.000	0.450	0.08	Pass
7	0.005	0.770	0.6	0.006	1.155	0.52	Pass
8	0.000	0.230	0.0	0.000	0.345	0.04	Pass
9	0.004	0.400	0.0	0.004	0.600	0.62	Pass
10	0.000	0.184	0.0	0.000	0.276	0.09	Pass
11	0.001	0.330	0.0	0.001	0.495	0.17	Pass
12	0.000	0.153	0.0	0.000	0.230	0.07	Pass
13	0.001	0.210	0.0	0.001	0.315	0.42	Pass
14	0.000	0.131	0.0	0.000	0.197	0.04	Pass
15	0.001	0.150	0.0	0.001	0.225	0.43	Pass
16	0.000	0.115	0.0	0.000	0.173	0.05	Pass
17	0.001	0.132	0.0	0.001	0.199	0.28	Pass
18	0.000	0.102	0.0	0.000	0.153	0.07	Pass
19	0.000	0.118	0.0	0.000	0.178	0.26	Pass
20	0.000	0.092	0.0	0.000	0.138	0.05	Pass
21	0.000	0.107	0.0	0.000	0.161	0.29	Pass
22	0.000	0.084	0.0	0.000	0.125	0.05	Pass
23	0.000	0.098	0.0	0.000	0.147	0.21	Pass
24	0.000	0.077	0.0	0.000	0.115	0.05	Pass
25	0.000	0.090	0.0	0.000	0.135	0.21	Pass
26	0.000	0.071	0.0	0.000	0.106	0.08	Pass
27	0.000	0.083	0.0	0.000	0.125	0.20	Pass
28	0.000	0.066	0.0	0.000	0.099	0.07	Pass
29	0.000	0.078	0.0	0.000	0.116	0.17	Pass
30	0.000	0.061	0.0	0.000	0.092	0.09	Pass
31	0.000	0.073	0.0	0.000	0.109	0.15	Pass
32	0.000	0.058	0.0	0.000	0.086	0.08	Pass
33	0.000	0.068	0.0	0.000	0.102	0.17	Pass
34	0.000	0.054	0.0	0.000	0.081	0.10	Pass
35	0.000	0.064	0.0	0.000	0.096	0.12	Pass
36	0.000	0.051	0.0	0.000	0.077	0.08	Pass
37	0.000	0.061	0.0	0.000	0.091	0.15	Pass
38	0.000	0.048	0.0	0.000	0.073	0.08	Pass
39	0.000	0.058	0.0	0.000	0.087	0.13	Pass
40	0.000	0.046	0.0	0.000	0.069	0.09	Pass

Voltage Source Verification Data (Run time)

EUT: Alarm Control Panel M/N:AN-808G
 Test category: Class-A per Ed. 3.0 (2006) (European limits)
 Test date: 2013-4-16 Start time: 10:25:16 End time: 10:28:06
 Test duration (min): 2.5 Data file name: H-000324.cts_data
 Comment: ON Report No.:ATE20130635
 Customer: Alean

Test Result: Pass Source qualification: Normal

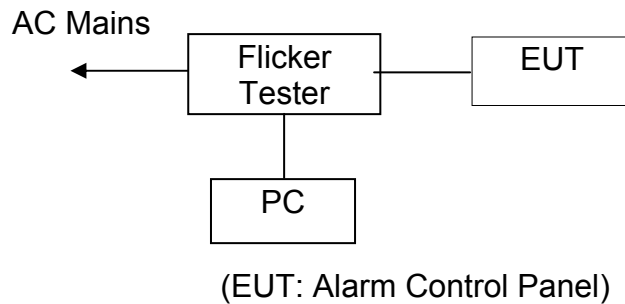
Highest parameter values during test:

Voltage (Vrms):	229.81	Frequency(Hz):	50.00
I_Peak (Amps):	0.172	I_RMS (Amps):	0.064
I_Fund (Amps):	0.055	Crest Factor:	2.900
Power (Watts):	8.1	Power Factor:	0.597

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.147	0.460	31.89	OK
3	0.363	2.068	17.56	OK
4	0.037	0.459	8.11	OK
5	0.088	0.919	9.61	OK
6	0.053	0.460	11.60	OK
7	0.059	0.689	8.56	OK
8	0.037	0.460	7.98	OK
9	0.026	0.460	5.72	OK
10	0.020	0.460	4.43	OK
11	0.021	0.230	9.10	OK
12	0.016	0.230	6.89	OK
13	0.017	0.230	7.20	OK
14	0.009	0.230	3.76	OK
15	0.014	0.230	6.22	OK
16	0.013	0.230	5.72	OK
17	0.017	0.230	7.54	OK
18	0.014	0.230	6.16	OK
19	0.010	0.230	4.22	OK
20	0.013	0.230	5.83	OK
21	0.008	0.230	3.35	OK
22	0.009	0.230	3.94	OK
23	0.007	0.230	2.90	OK
24	0.005	0.230	2.34	OK
25	0.008	0.230	3.66	OK
26	0.008	0.230	3.69	OK
27	0.006	0.230	2.67	OK
28	0.007	0.230	3.09	OK
29	0.007	0.230	3.07	OK
30	0.007	0.230	3.10	OK
31	0.005	0.230	2.23	OK
32	0.007	0.230	3.17	OK
33	0.006	0.230	2.66	OK
34	0.005	0.230	2.09	OK
35	0.003	0.230	1.35	OK
36	0.004	0.230	1.61	OK
37	0.004	0.230	1.81	OK
38	0.002	0.230	1.08	OK
39	0.003	0.230	1.51	OK
40	0.005	0.230	2.01	OK

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-3: 2008

7.3. Operation Condition of EUT

7.3.1. Setup the EUT and simulator as shown as Section 7.1.

7.3.2. Turn on the power of all equipment.

7.3.3. Let the EUT work in test mode (On/Off) and measure it.

7.4. Measuring Results

PASS.

Please see the attached page.

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

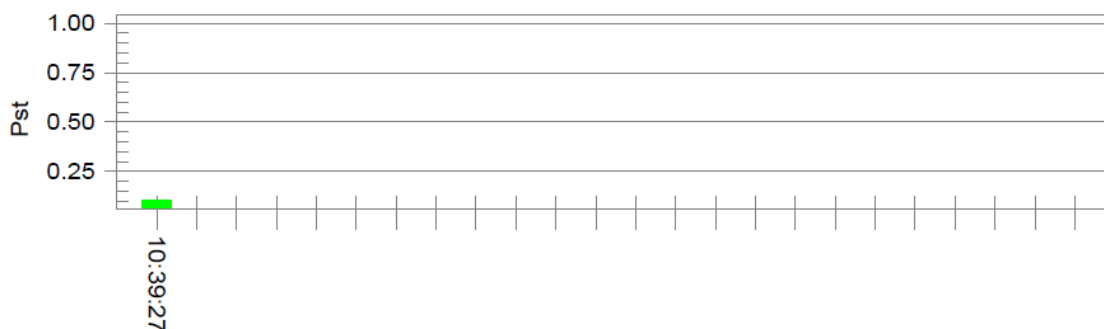
EUT: Alarm Control Panel M/N:AN-808G
Test category: All parameters (European limits)
Test date: 2013-4-16 **Start time:** 10:29:07 **End time:** 10:39:28
Test duration (min): 10 **Data file name:** F-000325.cts_data
Comment: ON Report No.:ATE20130635
Customer: Alean

Test Result: Pass

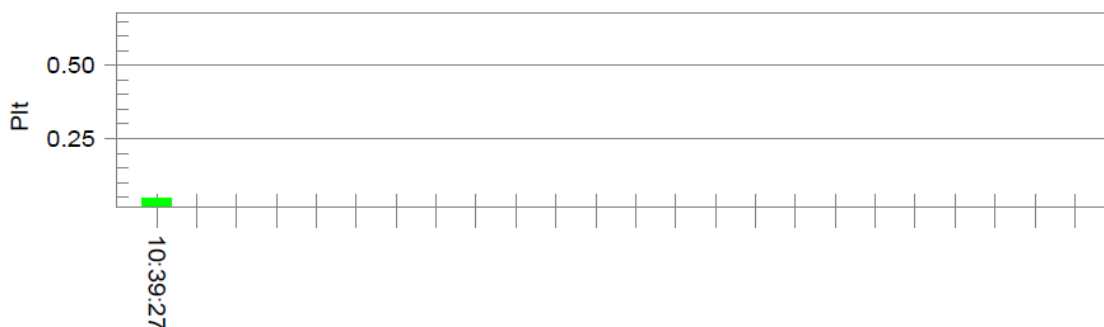
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



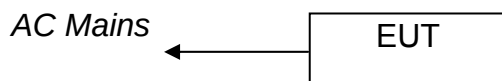
Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.82		
Highest dt (%):	0.33	Test limit (%):	3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.32	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.102	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.044	Test limit:	0.650 Pass

8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

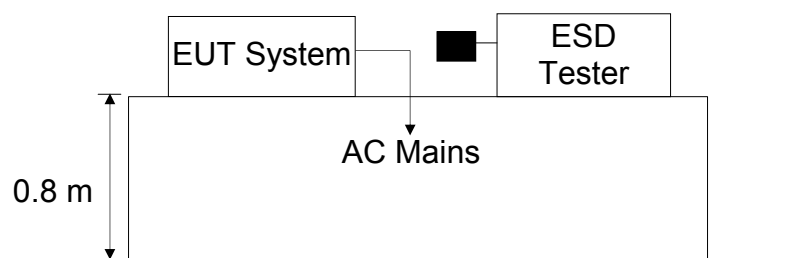
8.1. Block Diagram of Test Setup

8.1.1. Block diagram of connection between the EUT and simulators



(EUT: Alarm Control Panel)

8.1.2. Block diagram of ESD test setup



(EUT: Alarm Control Panel)

8.2. Test Standard

EN 61000-6-1: 2007

(IEC 61000-4-2: 2008 Severity Level: 3 / Air Discharge: ± 8 kV, Level: 2 / Contact Discharge: ± 4 kV)

Testing shall also be satisfied at the lower levels.

8.3. Severity Levels and Performance Criterion

8.3.1. Severity levels

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

8.3.2. Performance Criterion: **B**

8.4.EUT Configuration

The configuration of the EUT is same as Section 4.4.

8.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except for the test set up replaced by Section 8.1.

8.6.Test Procedure

8.6.1.Contact discharges to the conductive surfaces and to coupling planes:

The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points (a minimum of 50 discharges at each point). One of the test points shall be subjected to at least 50 indirect discharges (contact) to the centre of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode [see IEC 61000-4-2 for use of the Vertical Conducting Plane (VCP)]. Tests shall be performed at a maximum repetition rate of one discharge per second.

8.6.2.Air discharge at slots and apertures, and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur; examples are openings at edges of keys, or in the cover of keyboards and telephone handsets. Such points are tested using the air discharge method. See also IEC 61000-4-2 regarding painted surfaces. This investigation should be restricted to those areas normally handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

The application of electrostatic discharges to the contacts of open connectors is not required by this publication.

8.7.Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Results

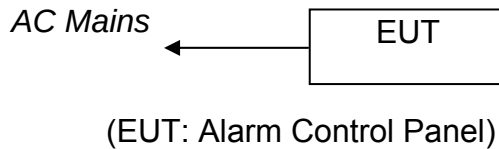
Accurate Technology Co., Ltd.

Applicant:	Shenzhen Alean Security Equipment Co., Ltd.	Test Date:	April 16, 2013
EUT:	Alarm Control Panel	Temperature:	25°C
M/N:	AN-808G	Humidity:	50%
Air discharge:	±2.0kV, ±4.0kV, ±8.0kV	Criterion:	B
Contact discharge:	±2.0kV, ±4.0kV	Power Supply:	AC 230V/50Hz
Test Mode:	On	Test Engineer:	Star
Location	Kind A-Air Discharge C-Contact Discharge	Result	
Nonconductive Enclosure	A	PASS	
Conductive Enclosure	C	PASS	
HCP	C	PASS	
VCP of front	C	PASS	
VCP of rear	C	PASS	
VCP of left	C	PASS	
VCP of right	C	PASS	
Remark :	Test Equipment : ESD Simulator (HAEFELY, PESD1610)		

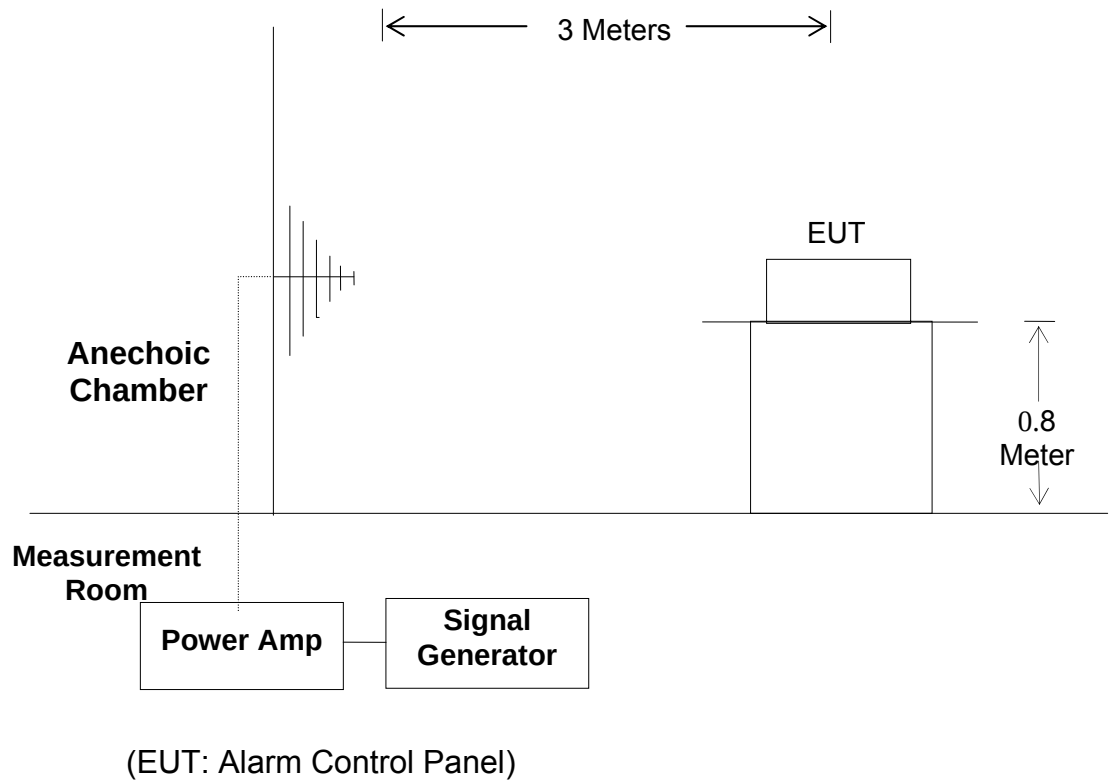
9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1. Block Diagram of Test

9.1.1. Block diagram of connection between the EUT and simulators



9.1.2. Block diagram of R/S test setup



9.2. Test Standard

EN 61000-6-1: 2007
(IEC 61000-4-3: 2010, Severity Level: 2, 3V/m)

9.3. Severity Levels and Performance Criterion

9.3.1. Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

9.3.2. Performance Criterion: **A**

9.4. EUT Configuration on Test

The configuration of the EUT is same as Section 4.4.

9.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 9.1.

9.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

9.7. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

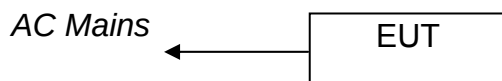
Accurate Technology Co., Ltd.

Applicant: Shenzhen Alean Security Equipment Co., Ltd.		Test Date: April 16, 2013		
EUT: Alarm Control Panel		Temperature: 25°C		
M/N: AN-808G		Humidity: 50%		
Test Mode: On		Criterion: A		
Rating: AC 230V/50Hz		Test Engineer: SMQ		
Modulation: ☐ None ☐ Pulse ☒ AM 1kHz 80%				
Frequency Range	Field Strength	Antenna polarity	Side	Result
80 MHz to 1000MHz	3 V/m	Horizontal Vertical	Front	PASS
1.4 GHz -2.0 GHz	3 V/m		Right	
2.0 GHz -2.7 GHz	1 V/m		Rear	
		Left		
Test Equipment : 1. Signal Generator : SMT03 (Rohde & Schwarz) 2. Power Amplifier : 150W1000 (AR) 3. Bilog Antenna : CBL6111C (Chase)				
Note:				

10.ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

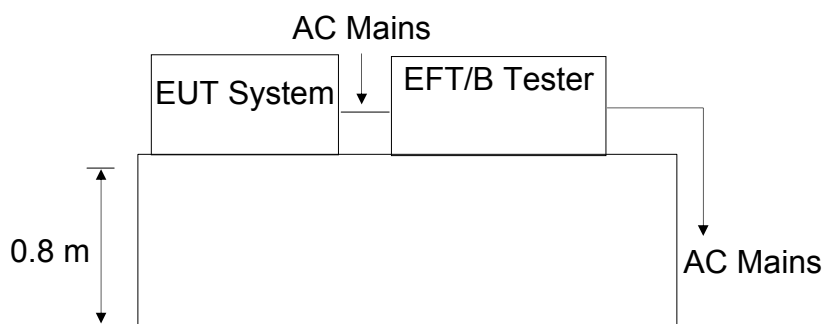
10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and simulators



(EUT: Alarm Control Panel)

10.1.2.Block Diagram of the AC Mains



(EUT: Alarm Control Panel)

10.2.Test Standard

EN 61000-6-1: 2007

(IEC 61000-4-4: 2012, Severity Level, Level 2: 1kV)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity levels

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 kV	0.25 kV
2.	1 kV	0.5 kV
3.	2 kV	1 kV
4.	4 kV	2 kV
X	Special	Special

10.3.2.Performance Criterion: **B**

10.4.EUT Configuration

The configuration of the EUT is same as Section 4.4.

10.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 10.1.

10.6.Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

10.6.2.For signal lines and control lines ports:

It's unnecessary to test.

10.6.3.For DC output line ports:

It's unnecessary to test.

10.7.Test Result

PASS.

Please refer to the following page.

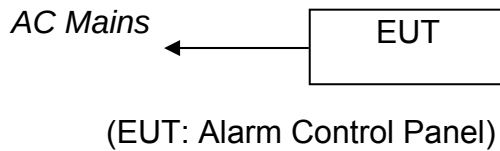
Electrical Fast Transient/Burst Test Results

Accurate Technology Co., Ltd.

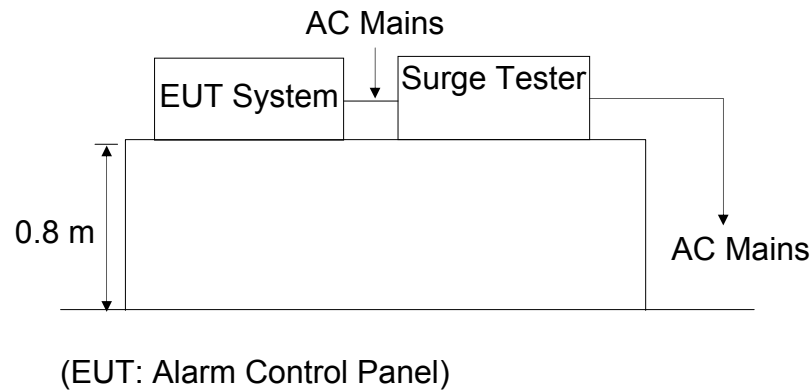
Standard	IEC 61000-4-4: 2012		Result: ☒ Pass / ☐ Fail
Applicant: <u>Shenzhen Alean Security Equipment Co., Ltd.</u>			
EUT: <u>Alarm Control Panel</u>			
M/N : <u>AN-808G</u>	Input Voltage: <u>AC 230V/ 50Hz</u>		
Criterion : <u>B</u>	Test Engineer: <u>Star</u>		
Ambient Condition : <u>25 °C</u>		<u>50% RH</u>	
Operation Mode: On			
Line : ☒ AC Mains		Line : ☐ DC Output Line ☐ Signal Line	
Coupling : ☒ Direct		Coupling : ☒ Capacitive	
Test Time : 120s			
Line	Test Voltage	Result(+)	Result(-)
L	1.0kV	PASS	PASS
N	1.0kV	PASS	PASS
Note :			
Test Equipment		Burst Tester Model : ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) CAPACITIVE CLAMP: HFK (EM TEST) Transformer: V4780S2 (EM TEST)	

11.SURGE IMMUNITY TEST

11.1.Block Diagram of Test Setup



11.1.1.Surge Test Setup



11.2.Test Standard

EN 61000-6-1: 2007
(IEC 61000-4-5: 2005, Severity Level: Level 2, 1.0kV)
Testing shall also be satisfied at the lower levels.

11.3.Severity Levels and Performance Criterion

11.3.1.Severity levels

Severity Level	Open-Circuit Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2.Performance Criterion: **B**

11.4.EUT Configuration

The configuration of the EUT is same as Section 4.4.

11.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 11.1.

11.6.Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.2.
- 2) For line to line coupling mode, provide a 1.0 kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7.Test Result

PASS.

Please refer to the following page.

Surge Immunity Test Results

Accurate Technology Co., Ltd.

Applicant: <u>Shenzhen Alean Security Equipment Co., Ltd.</u>					Test Date: <u>April 16, 2013</u>
EUT: <u>Alarm Control Panel</u>					Temperature: <u>25°C</u>
M/N: <u>AN-808G</u>					Humidity: <u>50%</u>
Power Supply: <u>AC 230V/50Hz</u>					Criterion: <u>B</u>
Test Mode: <u>On</u>					Test Engineer: <u>Star</u>

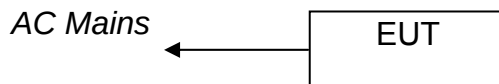
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					

Remark:	Test Equipment : ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) Transformer: V4780S2 (EM TEST)
---------	---

12.INJECTED CURRENTS SUSCEPTIBILITY TEST

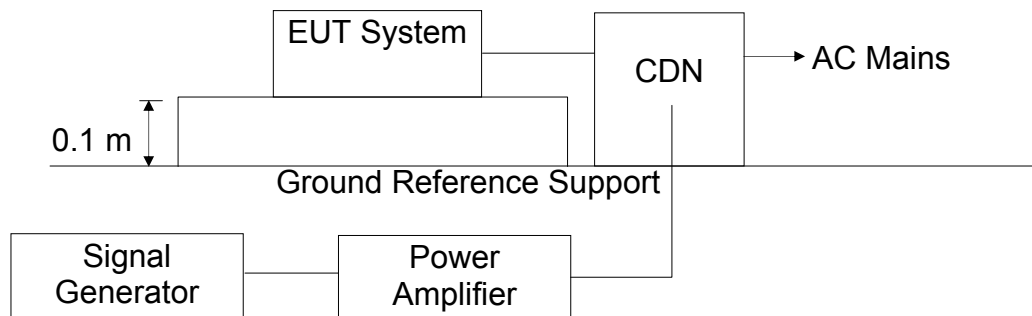
12.1.Block Diagram of Test Setup

12.1.1.Block diagram of connection between the EUT and simulators



(EUT: Alarm Control Panel)

12.1.2.Block Diagram of Test Setup



(EUT: Alarm Control Panel)

12.2.Test Standard

EN 61000-6-1: 2007

(IEC 61000-4-6: 2008, Severity Level 2: 3V(rms), 0.15MHz- 80MHz)

12.3.Severity Levels and Performance Criterion

12.3.1.Severity levels

Level	Field Strength V(rms)
1.	1
2.	3
3.	10
X	Special

12.3.2.Performance Criterion: A

12.4.EUT Configuration

The configuration of the EUT is same as Section 4.4.

12.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 12.1.

12.6.Test Procedure

12.6.1.For AC Mains

- 1) Set up the EUT, CDN and test generators as shown on Section 12.1.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150 kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.6.2.For signal lines and control lines ports:

It's unnecessary to test.

12.6.3.For DC output line ports:

It's unnecessary to test.

12.7.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

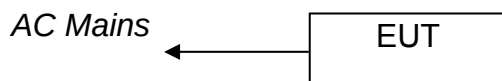
Accurate Technology Co., Ltd.

Applicant: Shenzhen Alean Security Equipment Co., Ltd. EUT: Alarm Control Panel M/N: AN-808G Power Supply: AC 230V/50Hz			Test Date: April 16, 2013 Temperature: 25°C Humidity: 50% Test Engineer: SMQ	
Test Mode: On				
Frequency Range	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 - 80	AC Mains	3V	A	PASS
Remark : 1. Modulation Signal:1kHz 80% AM Measurement Equipment : Conducted Immunity Test System: CIT-10 (FRANKONIA) CDN : CDN-M2/3 (FRANKONIA) EM Injection Clamp: F-203I-23mm (FCC) Calibration Fixture: F-203I-23mm-CF (FCC)			Note:	

13.VOLTAGE DIPS AND INTERRUPTIONS TEST

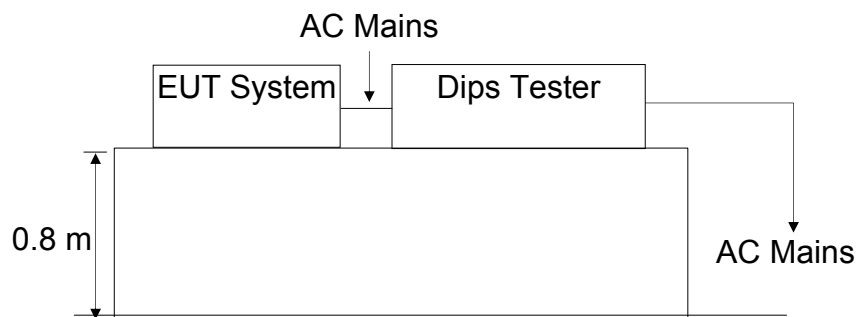
13.1.Block Diagram of Test Setup

13.1.1.Block diagram of connection between the EUT and simulators



(EUT: Alarm Control Panel)

13.1.2.Dips Test Setup



(EUT: Alarm Control Panel)

13.2.Test Standard

EN 61000-6-1: 2007 (IEC 61000-4-11: 2004)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity levels

Test Level $\%U_T$	Voltage dip and short interruptions $\%U_T$	Duration (in period)
0	100	0.5
40	60	1
70	30	5
		10
		25
		50
		*

13.3.2.Performance Criterion: **B&C**

13.4.EUT Configuration

The configuration of the EUT is same as Section 4.4.

13.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 13.1.

13.6.Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7.Test Result

PASS.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

Accurate Technology Co., Ltd.

Applicant: Shenzhen Alean Security Equipment Co., Ltd. EUT: Alarm Control Panel M/N: AN-808G Power Supply: AC 230V/50Hz			Test Date: April 16, 2013 Temperature: 25°C Humidity: 50% Test Engineer: Star	
Test Mode: On				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion ☐ A ☒ B ☒ C ☐ D	Result P=Pass F=Fail
0	100	0.5P	B	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS
Test Mode :				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion ☐ A ☐ B ☐ C ☐ D	Result P=Pass F=Fail
Remark: U _T is the rated voltage for the equipment.			Test Equipment : ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) Transformer: V4780S2 (EM TEST)	

14. PHOTOGRAPHS

14.1.Photo of Conducted Emission Measurement



14.2.Photo of Radiated Emission Measurement



14.3.Photo of Harmonic / Flicker Measurement



14.4.Photo of Electrostatic Discharge Test



14.5.Photo of RF Field Strength Susceptibility Test



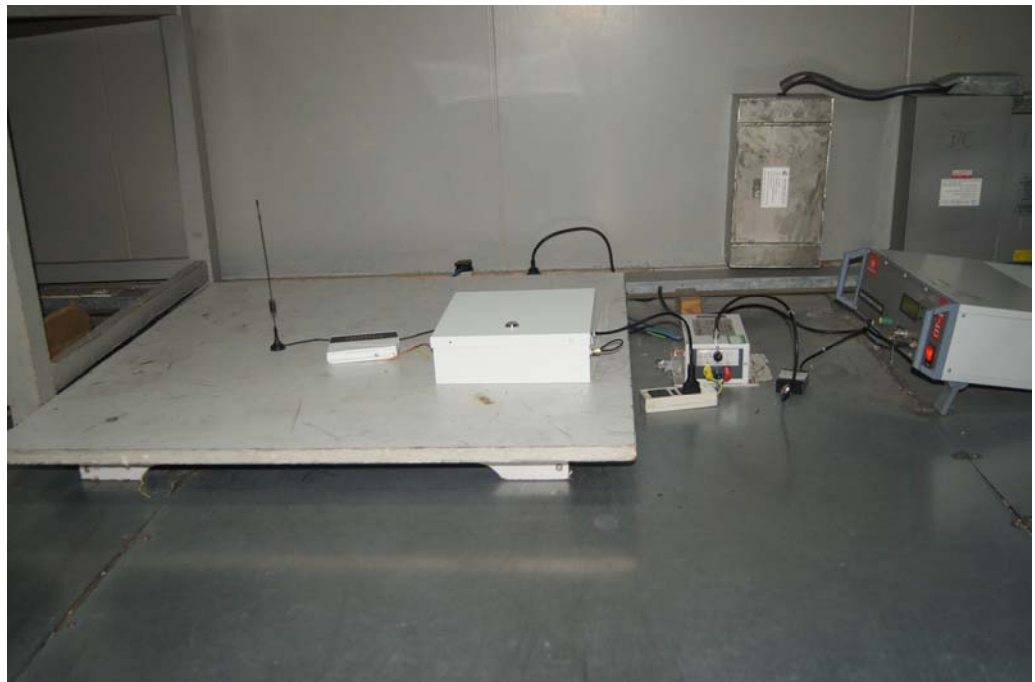
14.6.Photo of Electrical Fast Transient /Burst Test



14.7.Photo of Surge and Voltage Dips and Interruption Immunity Test



14.8.Photo of Injected Current Susceptibility Test



14.9.Photo of EUT



